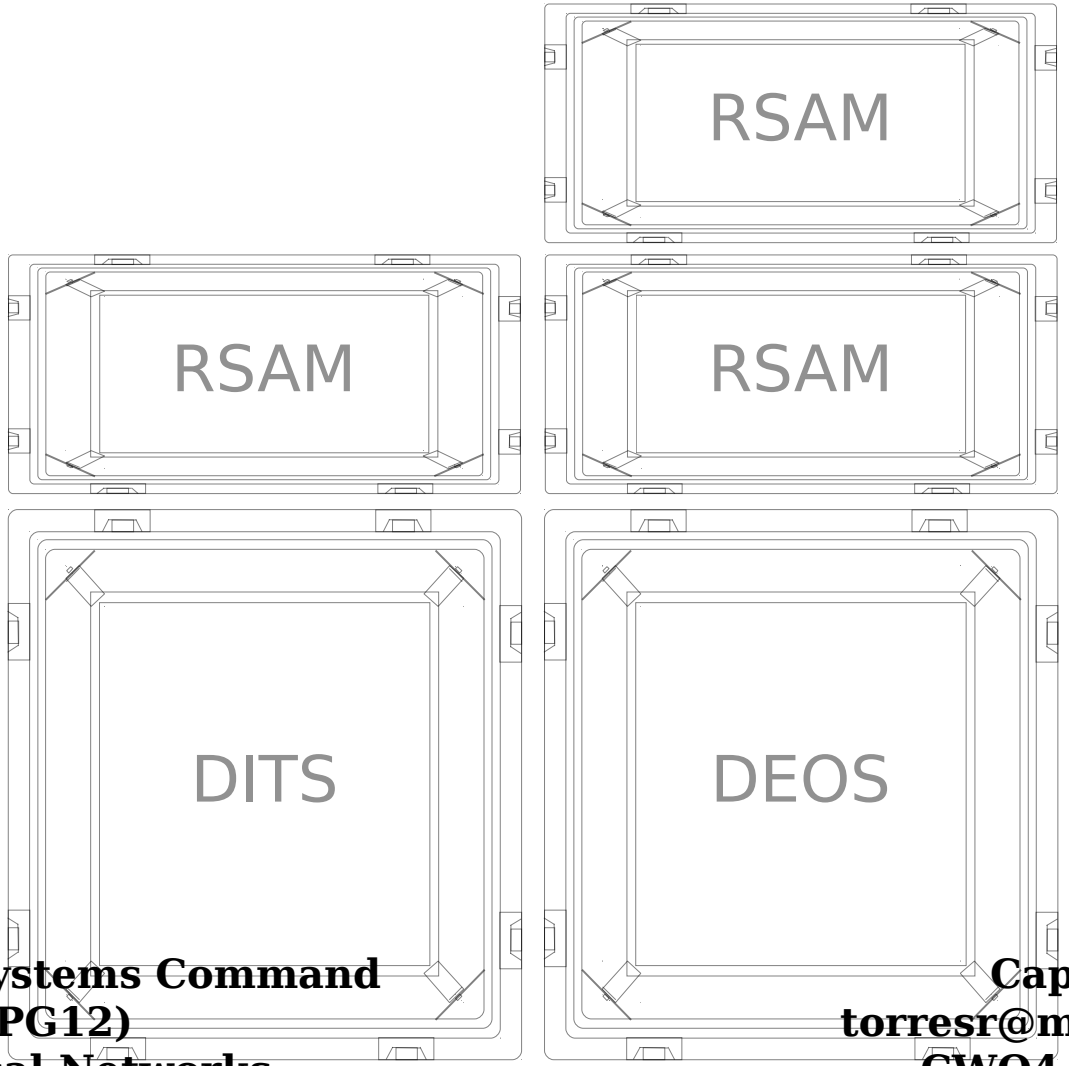
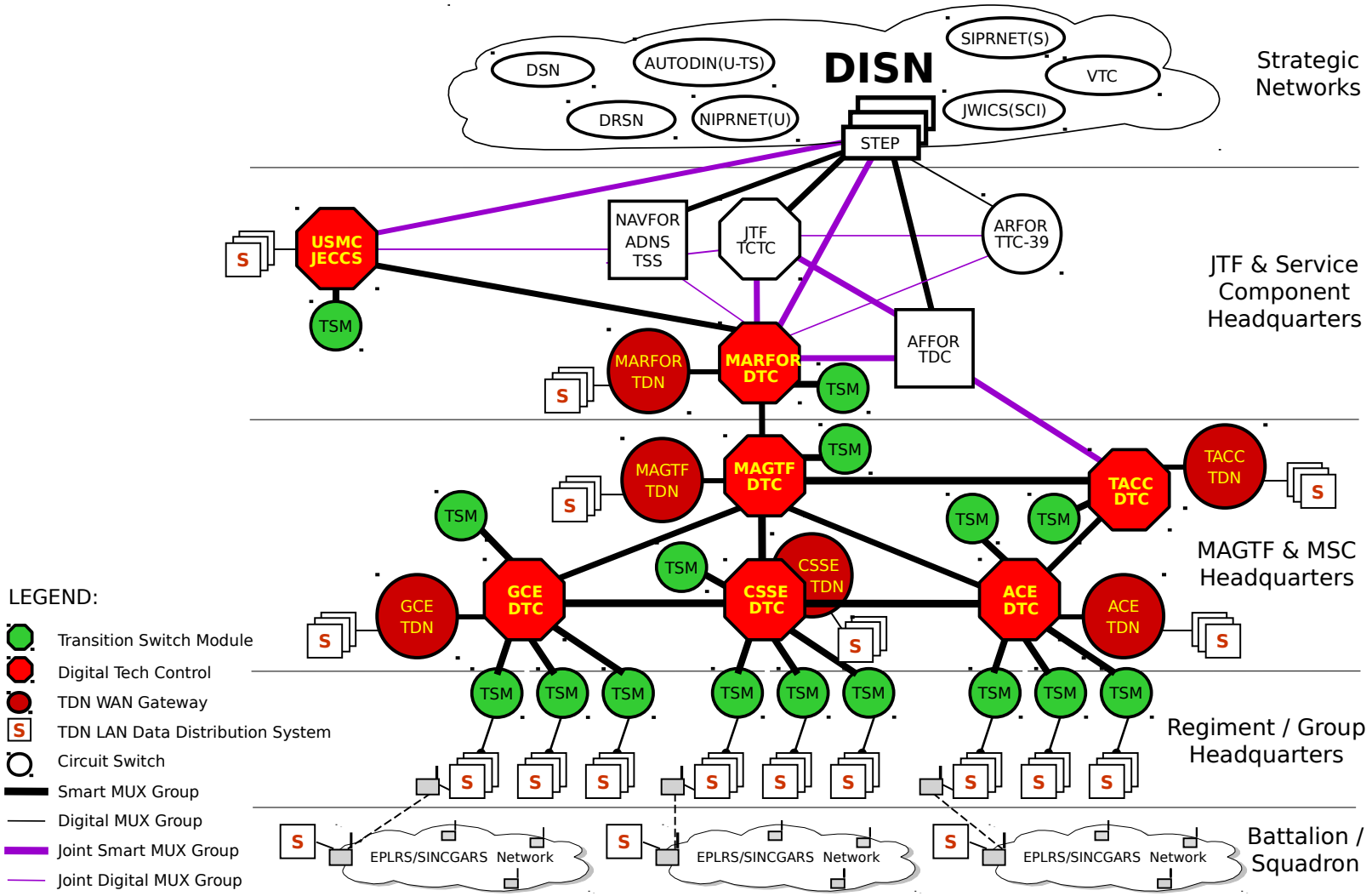
Transition Switch Module



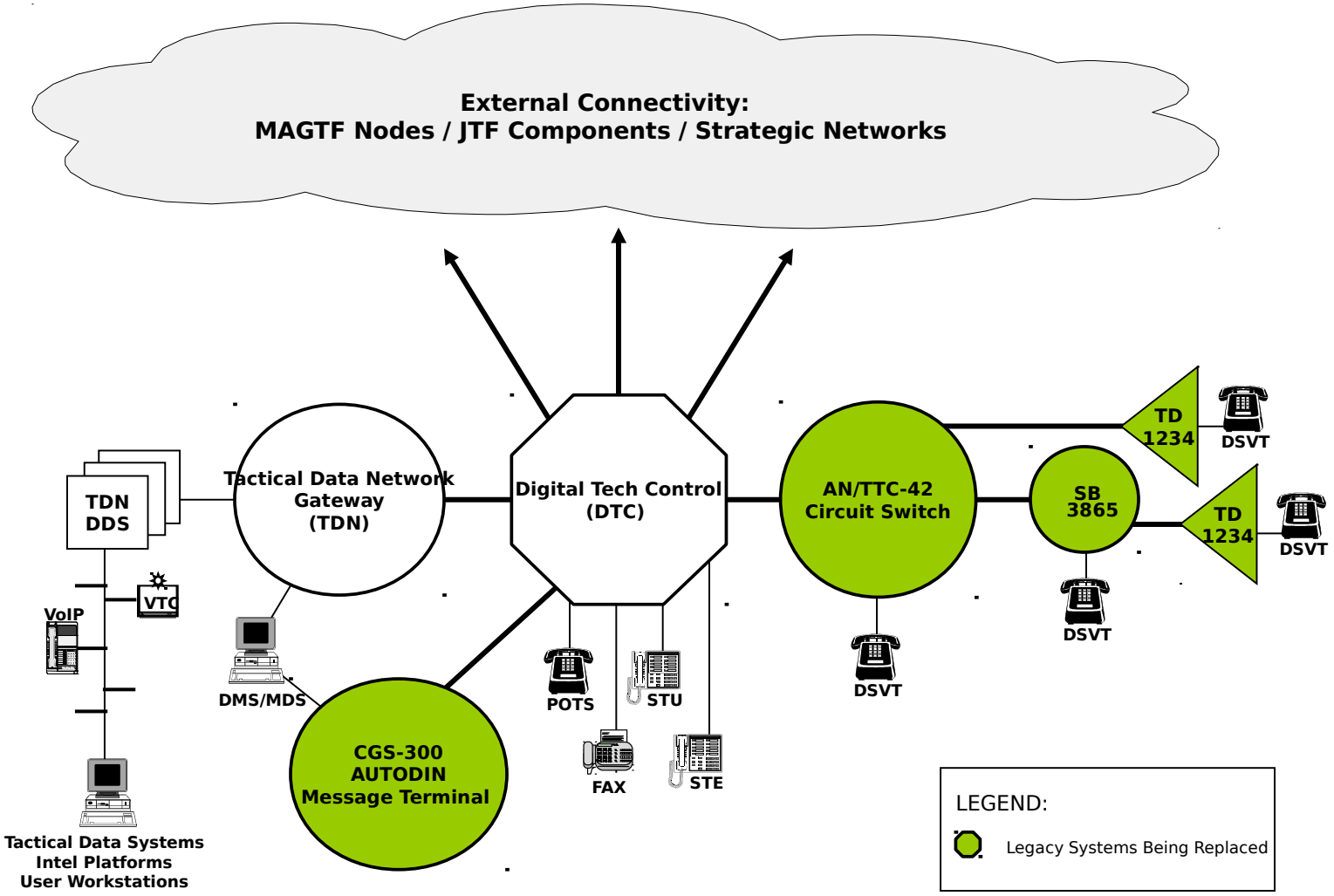
Marine Corps Systems Command
MAGTF C4ISR (PG12)
PMM 122 Tactical Networks
5 November 2003

Capt Raul Torres
torresr@mcsc.usmc.mil
CWO4 Dave Wegner
wegnerdk@mcsc.usmc.mil

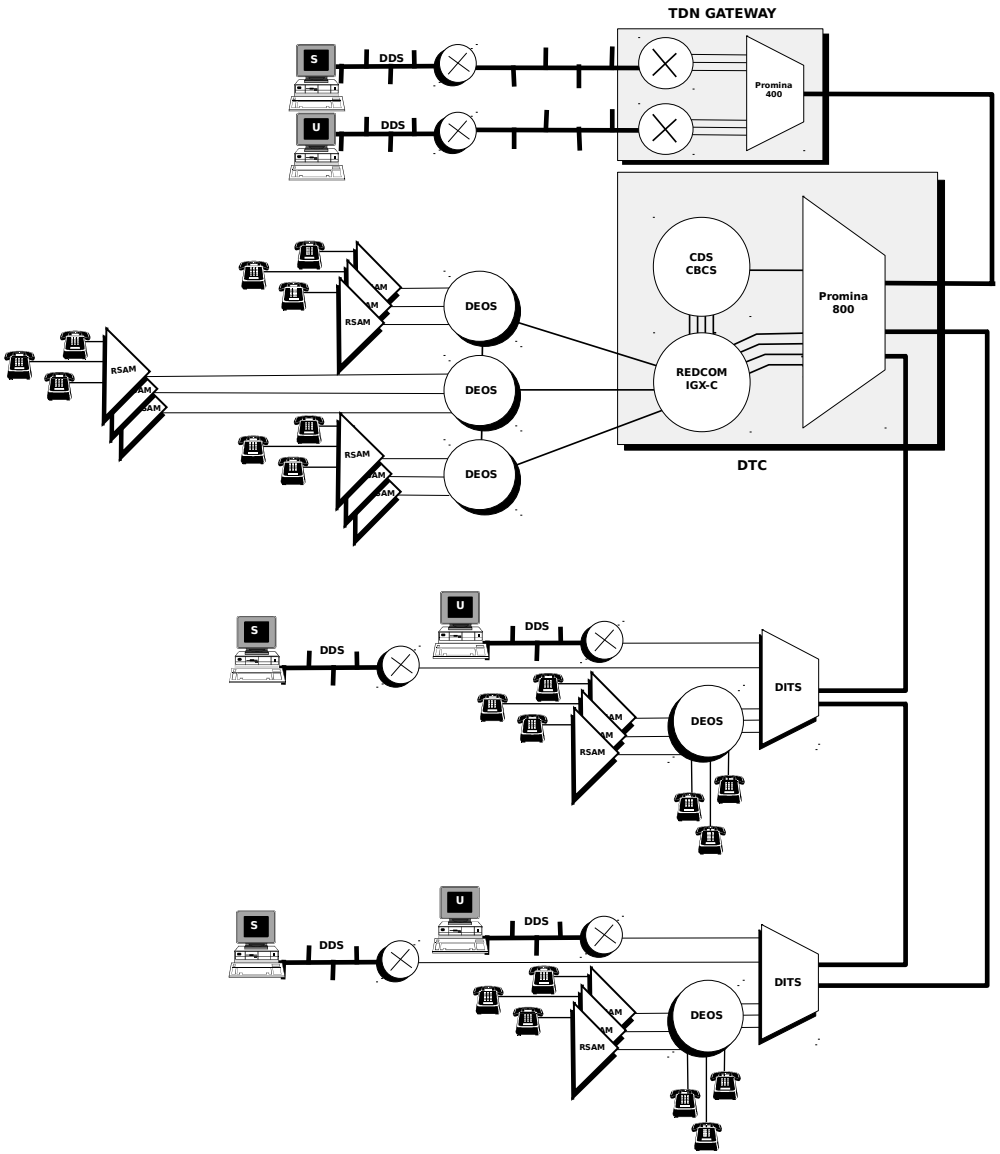
Operational Overview



Current CE Node



Planned MSC C⁴



Functional Configuration

Transition Switch Module

Remote Subscriber Access Module (RSAM)

Remotable T-1 Channel Bank
T-1/CSU/DSU Modems
Uninterruptible Power Supply

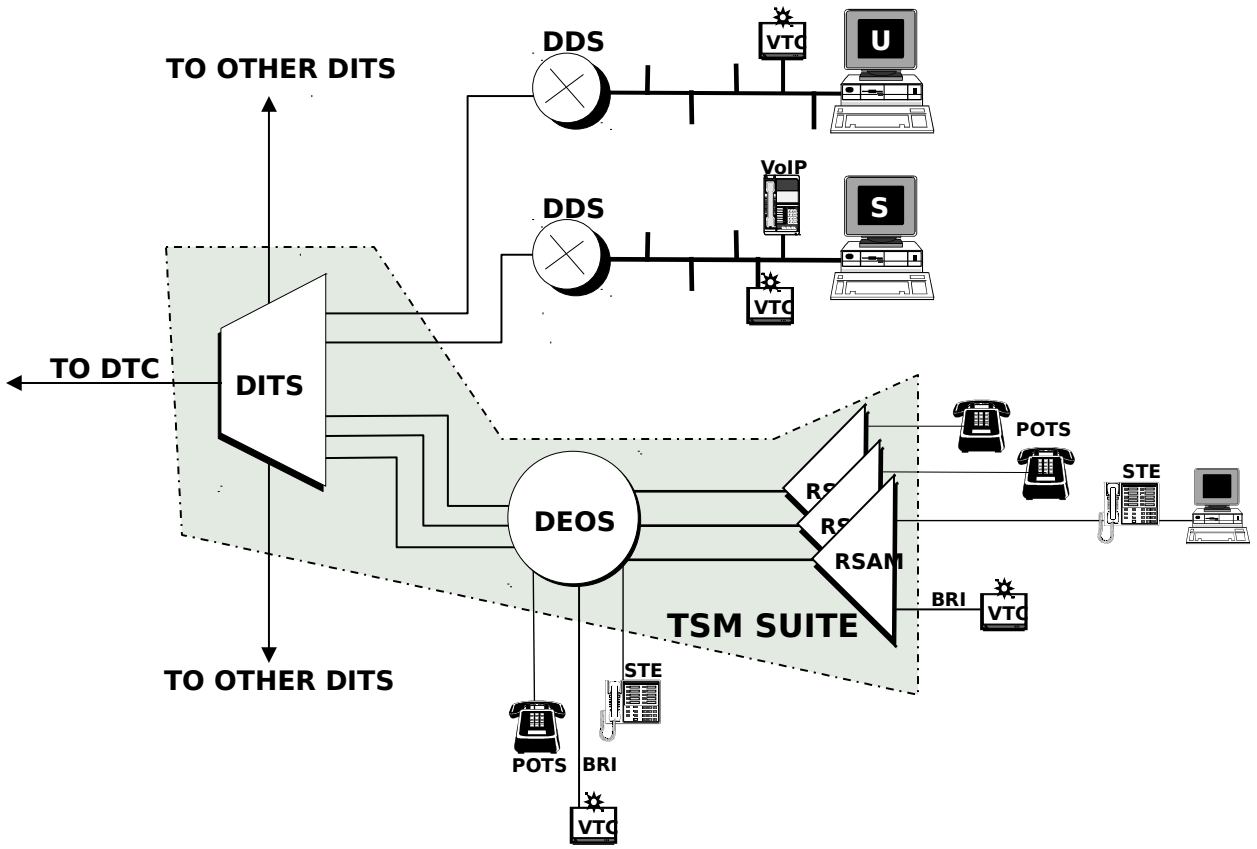
Deployable End Office Suite (DEOS)

Man-Machine Interface	Circuit Switch
Remotable Call Service Attendant	Uninterruptible Power Supply
Signal/Power Entry Panels	Cable/Ancillary Storage
T-1/CSU/DSU Modems	Configuration Kit/Management

Deployable Integrated Transport Suite (DITS)

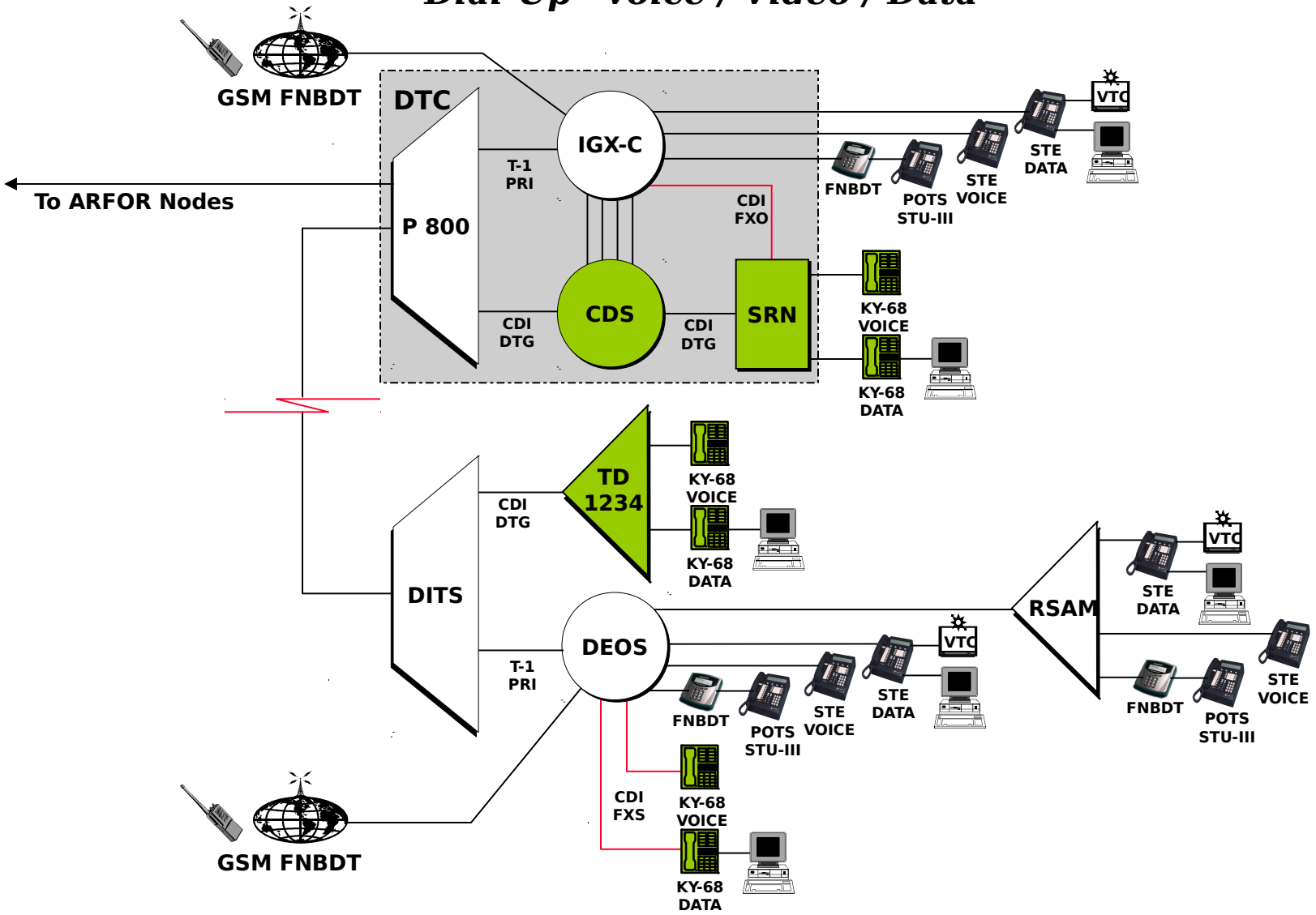
Man-Machine Interface	
Bandwidth Manager	Signal/Power Entry Panels
Uninterruptible Power Supply	Fiber Optic/CDI Modems
Cable/Ancillary Storage	Transmission Security (GFM)
Configuration Kit/Management	Rubidium Timing Source

Nodal Capabilities

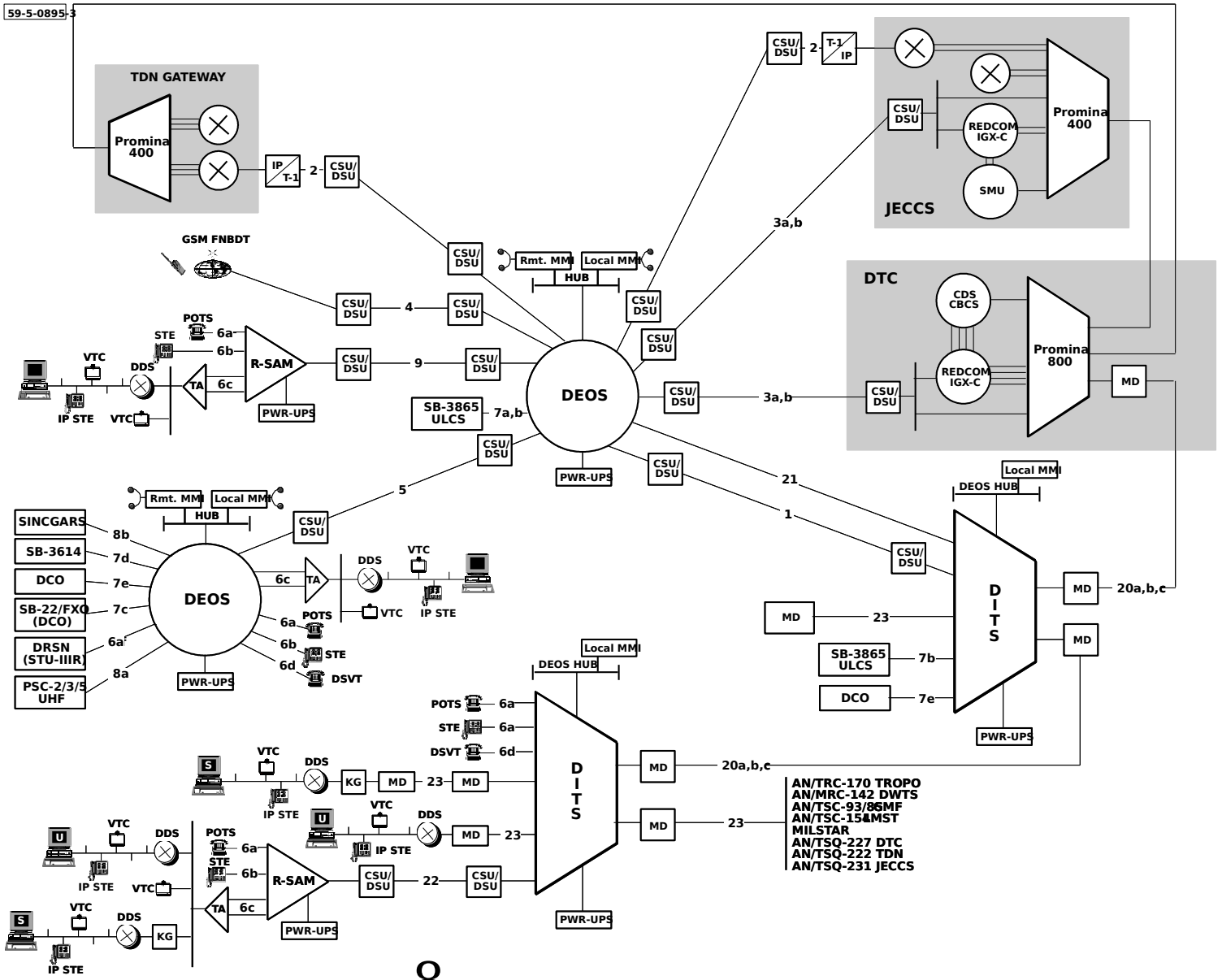


Secure Connectivity

"Dial-Up" Voice / Video / Data



Connectivity Options



Connectivity Options Notes

DEOS:

1. DITS, T1/FT1/PRI/FPRI
2. T1/IP (converts T1 to IP)
3. DTC:

a. REDCOM IGX, T1/FT1/PRI/FPRI
b. Promina 800, T1/FT1/PRI/FPRI

4. GSM FNBDT, T1/FT1/PRI/FPRI
5. DEOS, T1/FT1/PRI/FPRI
6. Subscriber:

a. POTS, 2-wire (e.g., STU-III, STE, etc.)
b. STE, BRI (ISDN mode)
c. Terminal Adapter, BRI (e.g., VTC and SECRET/UNCLAS Data)
d. DSVT, 4-wire CDI balanced

7. Special:

a. SB-3865, 4-wire analog IST
b. SB-3865 CDI
c. SB-22/FSXO, 2-wire LS/GS
d. SB-3614, 4-wire analog IST
e. DCO, 2-wire FXO

8. Radio Wire-line Interface:

a. UHF SATCOM, e.g., PSC-2/3/5
b. SINCGARS

9. RSAM, T1/FT1/PRI/FPRI

DITS:

Subscriber: 6a, 6b, and 6d (see DEOS interface)
Special: 7b and 7e (see DEOS interface)

20. Modem:

a. DTC or DITS, CDI unbalanced
b. DTC or DITS, fiber
c. DTC or DITS, CSU/DSU

1 and 21. DEOS, T1/FT1/PRI/FPRI (w/o CSU/DSU)

22. RSAM, T1/FT1/PRI/FPRI
23. General Purpose modem (compatible interface)

RSAM:

Subscriber: 6a, 6b, and 6c (See DEOS interfaces)

9. DEOS, T1/FT1/PRI/FPRI
22. DITS, T1/FT1/PRI/FPRI

DEOS

The DEOS shall be based upon and supported by Integrated Services Digital Network (ISDN) technology. The circuit switch shall be modular in implementation and capable of supporting the subscriber and transmission interfaces

Circuit Switch:

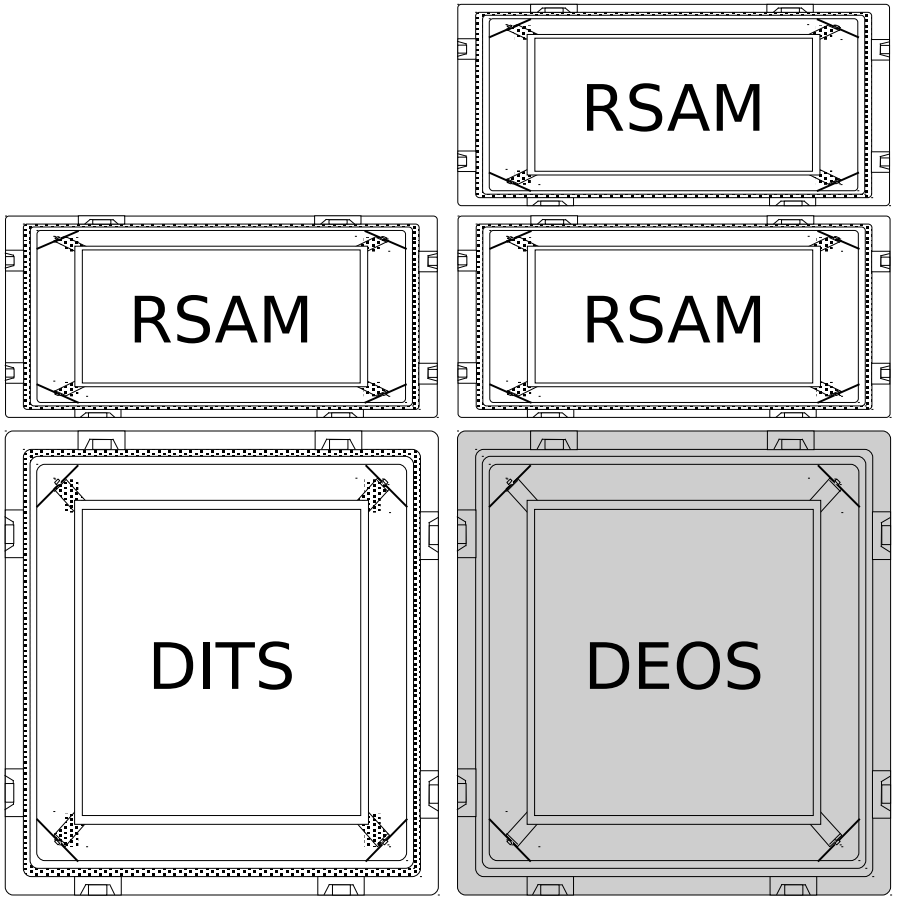
- (88) 2w POTS
- (8) 4w BRI (S)
- (6) T-1/E-1 (Threshold)
- (8) T-1/E-1 (Objective)

Configuration Kit:

- (4) RWI
- (4) 2w LS/GS Trunks
- (4) SF Trunks (TT-34/36)
- (2) E&M Trunks
- (4) 2w BRI (U)

UPS:

- (15) Minutes (Threshold)
- (30) Minutes (Objective)



DEOS Continued

Administration/Management:

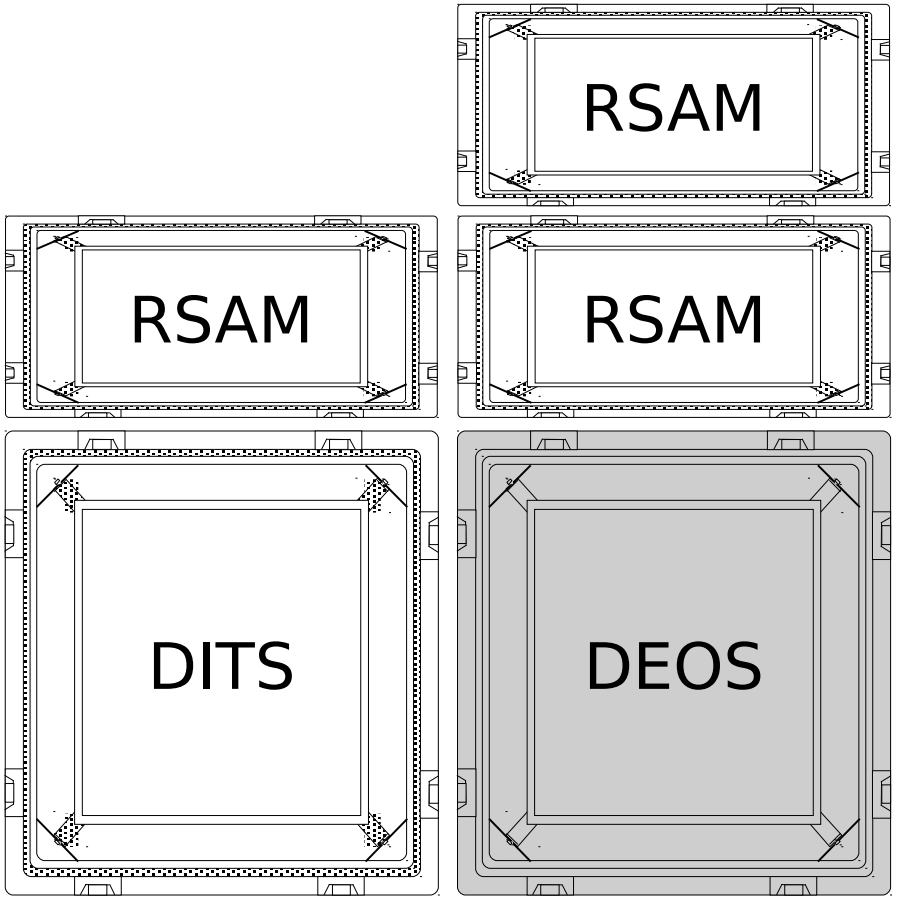
- (2) Man Machine Interfaces
- MCHS
- LAN Based
- Templates for Common Tasks
- Scripting Utility
- GUI (Objective)
- PCMCIA Database Storage
- Multiple User Access Levels

Call Service Attendant:

- LAN Based
- Precedence Based Queuing

ISDN Terminal Adapters:

- (2) 384 Kbps



DITS

Transmission Resource Controller:

- (24) STU/FNBDT Compression Ports
- (48) LD-CELP Compression Ports
- (4) T-1/PRI Ports
- (6) 1.2 –1344 Kbps Ports
- (4) 75 bps – 64 Kbps Ports
- (12) 9.6 Kbps – 8 Mbps Ports
- (4) FXS Ports
- (4) 16 Kbps - 8 Mbps Trunks

NRZ – CDI Modems:

- (4) T-FOCA Interfaces

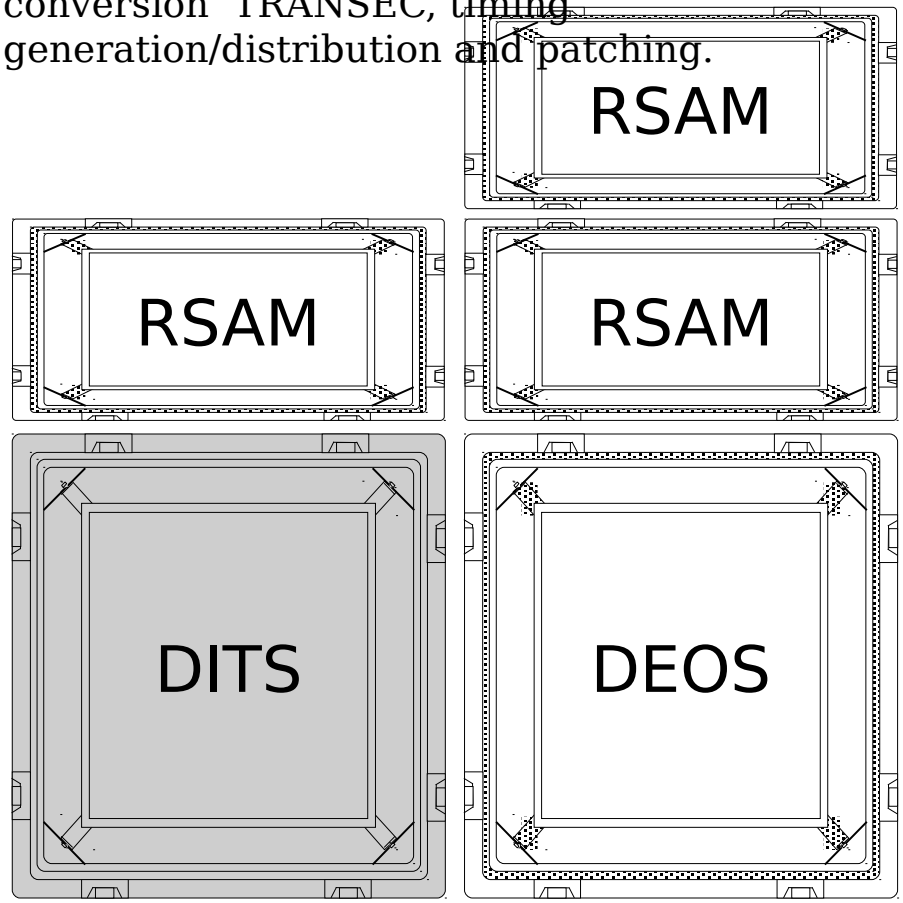
72 Kbps – 8.192 Mbps

MD-1272 Compatible

- (4) CDI Unbalanced Interfaces

72 Kbps – 4.608 Mbps

The DITS shall provide a bandwidth management function that includes: automatic re-routing, call compression, echo cancellation and ISDN PRI switching. As well as a technical control function that includes: NRZ to CDI conversion TRANSEC, timing generation/distribution and patching.



DITS Continued

Transmission Security:

- (4) KIV-19 TEDs

Timing Distribution:

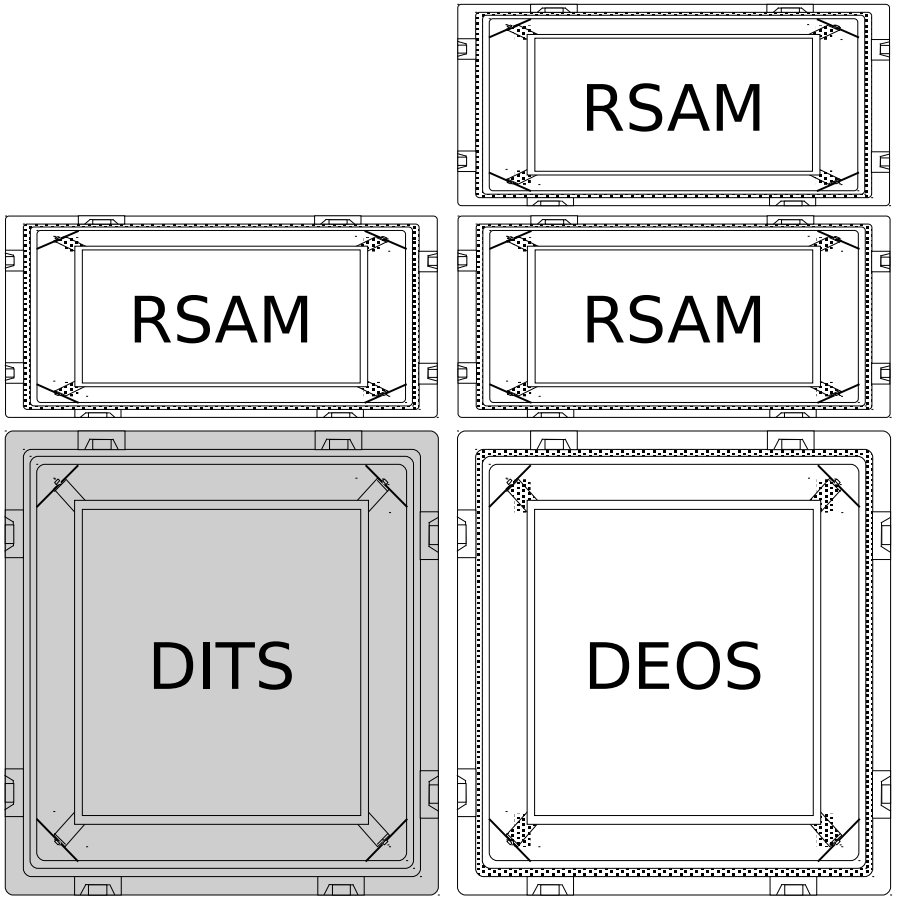
- GPS Disciplined
- P(Y) Code Capable
- High Stability Rubidium ($1x10^{-11}$)

Administration/Management:

- (1) Man Machine Interface
- MCHS
- LAN Based
- PCMCIA Database Storage
- Multiple User Access Levels

UPS:

- (15) Minutes (Threshold)
- (30) Minutes (Objective)



RSAM

The RSAM shall provide the capability to extend aggregated subscriber services to remote locations (2mi) that have ISDN BRI and POTS interface requirements

<u>CSU/DSU Modems:</u>

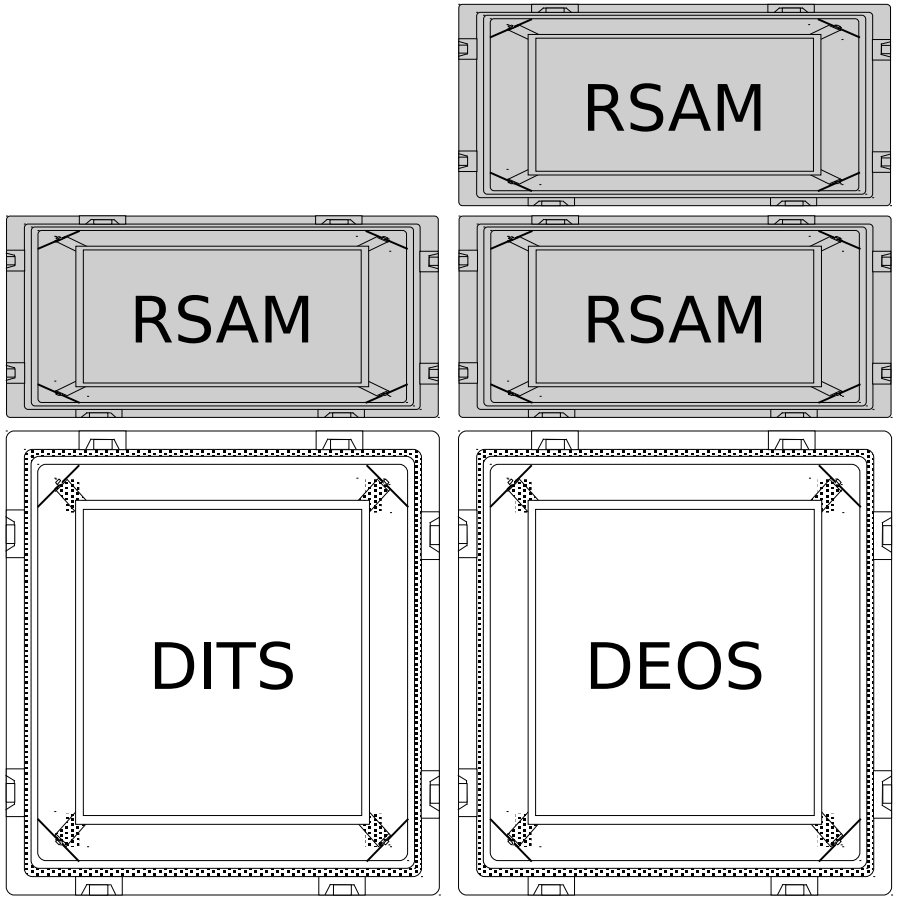
- Local and Remote
- DS-1 Format
- (2) Miles

<u>Channel Bank:</u>

- (1) T-1/PRI
- (19) 2w POTS
- (2) 4w BRI (S)

<u>UPS:</u>

- (15) Minutes (Threshold)
- (30) Minutes (Objective)



Reality Check

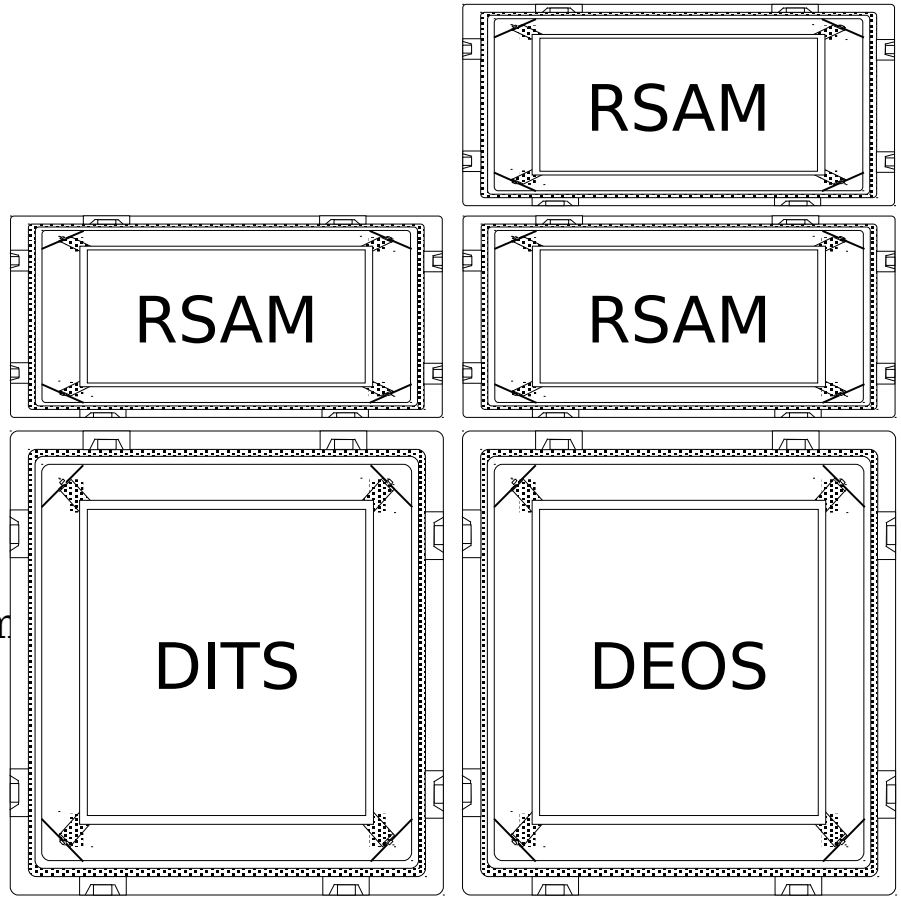
***Original "Replacement" Quantities*:**

- (55) 280 line TTC-42s
- (360) 30 Line SB-3865s
- (1) STE per KY-68

***Validation of Requirements*:**

- Training Devices vs. End Items

  MCCES/MarForRes
- Three unique TAMCNs
- Unit Mission / Support Requirem



Training Devices

Divestiture From Tradition:

- Same Rack – Different Card / Component Quantities
- Simulator / CBT Possibilities
- Cost Savings
- Meet the Requirement
- Transit Cases vs. Rack Mount
- Life Cycle / Maintenance Cost Estimates in ULSS
- T & E / MCCES / MFR / MCCDC Validation

DEOS

Production Configuration	Training Configuration
Commercial Circuit Switch (CCS) Multi-Shelf (88) POTS (4) BRI-S (6) T-1 Threshold (8) T-1 Objective	**Commercial Circuit Switch (CCS)** Single-Shelf (16) POTS, (2) BRI-S (4) T-1, (2) RWI, (4) KY-68 (2) GS/LS, (2) SF, (2) BRI-U
Channel Service Unit/Data Service Unit (CSU/DSU) (3) Pairs (Local / Remote) Threshold (5) Pairs (Local / Remote) Objective	**Channel Service Unit/Data Service Unit (CSU/DSU)** (1) Pair (Local / Remote)
Man–Machine Interface (MMI) (2) Local Administration / Remote CSA function	**Man–Machine Interface (MMI)** (2) Local Administration / Remote CSA function
Terminal Adapter (TA) (2) Remote	**Terminal Adapter (TA)** (1) Remote
Ethernet Hub	**Ethernet Hub** Common (Classroom)
Configuration Kit (4) RWI, (4) KY-68, (4) GS/LS (4) SF, (4) BRI-U	**Configuration Kit** Pre Faulted CCAs
Uninterruptible Power Supply (UPS) (15) Minutes Threshold (30) Minutes Objective	**Uninterruptible Power Supply (UPS)** Common (Classroom)

DITS

Production Configuration	Training Configuration
Transmission Resource Controller (TRC) Multi-Shelf Dual Processor (3) Aggregate Trunks, (4) PRI (24) STU Compression, (32) Echo Suppression (48) Voice Compression, (18) Data Ports	**Transmission Resource Controller (TRC)** Single-Shelf Single Processor (2) Aggregate Trunks, (2) PRI (12) STU Compression, (32) Echo Suppression (24) Voice Compression, (8) Data Ports
CDI / NRZ Modems (FOM Compatible) (4) CV-2048 / MD-1272	**CDI / NRZ Modems (FOM Compatible)** (2) CV-2048 / MD-1272
Man–Machine Interface (MMI) (1) Local Administration	**Man–Machine Interface (MMI)** (1) Local Administration
Trunk Encryption Device (TED) (4) KIV-19	**Trunk Encryption Device (TED)** (2) KIV-19
Timing Distribution	**Timing Distribution** Common (Classroom)
Configuration Kit None	**Configuration Kit** Pre Faulted CCAs
Uninterruptible Power Supply (UPS) (15) Minutes Threshold (30) Minutes Objective	**Uninterruptible Power Supply (UPS)** Common (Classroom)

TSM Spiral

(Evolutionary Acquisition)

Integration